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Diagnosis of Toothache and Neuralgia of Dental Origin.

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Diagnosis of Toothache and Neuralgia of Dental Origin.

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NEURALGIA—pain at some point distant from the seat of injury or disease—is one of the commonest of complaints. The most frequent seat of neuralgia is the region supplied by the fifth nerve; and the most common cause is to be found in abnormal or pathological conditions of the teeth.

The frequency with which such conditions of the teeth give rise to neuralgic pain is easily accounted for. Each jaw holds sixteen teeth, and every tooth contains a pulp composed of delicate nerve fibrils, vessels, and cells. This pulp is enclosed within unyielding ivory walls where, unless the chamber be fully opened as a consequence of caries, swelling is impossible, and whence exudations cannot easily escape. Inflammation of the dental pulp is accompanied by tension more extreme than occurs in any other part; and the comparative severity of local pain as well as the frequent excitation of distant pain is thus explained. Although the tension accompanying inflammation around the roots of teeth—periodontitis—be not so exceptional it also is severe, the roots of the teeth being encased within more or less dense osseous alveoli.

Neuralgic pain due to dental disease may be as intense as that arising from any other cause; it may occur in paroxysms with intervals of complete freedom; it may be regularly periodic, and there are no symptoms which serve to differentiate neuralgia due either to remote or constitutional causes from that set up entirely by local disease. Other recognizable sufficient cause not being apparent, examination of the teeth cannot therefore be omitted in forming a diagnosis.

Other diseases besides those of the teeth may involve the fifth nerve and give rise to neuralgia. The nerve or its branches may be compressed by a tumour or aneurism; or may be affected by inflammation, exostosis, or necrosis of the bony canals through which they pass. Tumours of the antrum may be a cause. A case of

myxoma springing from the infra-orbital nerve filling the antrum and invading the orbit and giving rise to intense neuralgia and toothache, is recorded by Mr. Bland Sutton[1]. Inflammation and empyema of the antrum are mostly attended by severe neuralgia and toothache, and such pains may also be due to inflammation within the ear or orbit. Pain from nodes of the skull is often neuralgic in character. Neuralgia in many instances also occurs without existence of any lesion discoverable by the most minute examination. It is doubtless due frequently to unrecognizable pathological conditions of nerve centres, ganglia or great trunks. In some instances where examination *post mortem* has been carried out, well-marked histological changes have been observed in the Gasserian ganglion and very slight changes in peripheral branches.

The fifth nerve possesses widespread relationship not only with cranial but also with visceral regions. Irritation in any region is apt to be projected on territories deriving their nerve supply from closely-related centres, and in this way are sometimes to be accounted for reflex or sympathetic neuralgias of the fifth nerve where no local cause exists. It must be borne in mind also, that lesions of nerves not necessarily painful or not necessarily excitants of more than strictly local pain may give rise to neuralgia in consequence of disorder of the general health ; and thus cases are frequently met with in which diseased teeth, previously the cause of little or no pain, give rise to neuralgia when the patient has become lowered by disease or exhaustion.

Several distinct pathological conditions of teeth are capable of giving rise to neuralgia, but among these conditions chronic inflammation of the pulp due to caries is by far the most frequent cause. Diagnosis of this condition is by no means always quite simple ; and in this matter, as in any case of neuralgia, it is far from sufficient to accept a patient's assurance that his teeth are not decayed or that he does not suffer from toothache. Patients are often unconscious of the existence of disease ; and teeth, not the seat of appreciable pain are frequently excitants of distant neuralgia.

When complaint is made of both toothache and neuralgia, local conditions cannot of course escape attention.

Toothache—pain within and around teeth—is merely a symptom, not a disease, and it accompanies various conditions which will be presently referred to more fully. It must not be forgotten that teeth, the seat of pain, may be perfectly sound, or if decayed may not be the cause of the pain localised in them. The pain may be neuralgic or reflected from some more or less distant tooth.

True facial neuralgia not associated with dental disease is commonly accompanied by violent toothache. In such cases patients not infrequently undergo extraction of many sound teeth without relief. An operator who without discrimination extracts teeth which patients point to as the source of suffering, must in a large proportion of cases draw a wrong tooth and often sacrifice a sound one. Extraction ought never to be performed even in inveterate cases, unless at least a reasonable suspicion is established of the existence of incurable dental disease. In many phases dental disease is amenable to conservative treatment; and to extract a tooth under such circumstances must be reckoned an unjustifiable if not barbarous procedure. Toothache in the majority of instances is due to a local cause, although this is very often not discoverable without careful examination of all the teeth. Where teeth in various conditions of decay are present, it will occasionally be found that the source of pain lies in those not most broken down.

In teeth in the later stages of decay the pulp will mostly have been to a greater or less degree devitalized or destroyed by inflammatory changes; whereas in those in which caries has more recently penetrated to the centre, the pulp will be found entire and with undiminished sensibility

In dealing with cases of neuralgia, it is necessary that every tooth be minutely examined and tested. Fine steel curved dental probes must be used to discover and try the depth of carious cavities. A small opening in the enamel will often lead into a cavity in which the dentine if not destroyed is softened and disorganised as far as the surface of the pulp; and this is in consequence inflamed. Cavities hidden in interstices and on approximal surfaces invisible to ordinary examination, must be sought for. The difficulty of detecting decay affecting surfaces of teeth in close apposition is increased where jaws are crowded. The crown of a sound tooth is often tightly wedged against a carious neighbour, completely preventing a view of the cavity and even rendering approach impossible without the cutting of a way. Some of the worst examples of this kind associated with neuralgia are found in connection with the lower wisdom tooth. This tooth often comes forward obliquely from the base of the ascending ramus with its crown tilted forward and the anterior edge impinging upon the neck of the second molar close to the gum. In the V-shaped space so formed food constantly lodges, and decay begins on the posterior surface of the molar. As decay progresses, the crown of the wisdom tooth advances and occupies the cavity. At length the nerve of the molar becomes exposed and

inflamed, and toothache or neuralgia supervenes. It is sometimes only by pressing back overhanging folds of mucous membrane and by use of dental mirror and probe that this condition can be discovered; and patients suffering neuralgia from this cause are commonly unaware of the condition.

Cavities along the necks of teeth by the gum margin and extending below the gum and in other positions in which food is not forced during mastication, are often invisible to casual observation, and are not seldom unknown to patients who may thus believe they have no decayed teeth.

To help detect offending members of the set the teeth may be percussed one by one. A slight smart tap or two with a steel instrument upon the masticating surface may reveal an extra sensibility in one or other tooth, which by further scrutiny may be found the seat of disease. A fine jet of cold water thrown by a dental syringe is a good test—each tooth under trial being so far as possible isolated by a fold of napkin. This test, as also probing when the probe touches the nerve, will not uncommonly excite a paroxysm of neuralgia; and this, although the pain is regrettable, is often satisfactory in establishing a diagnosis.

Filled teeth, and especially those with large metallic stoppings which appear nearly to approach the pulp, must be carefully scrutinised; for it often happens that the pulps of such teeth pass into a state of irritation, congestion, or inflammation. Where doubt exists, especially where hyperæsthesia is present, stoppings must be removed and further examination carried out. The mass of pulp in a molar will sometimes be found dead, whilst the nerve in one or other root canal retains its vitality and is inflamed.

Impacted lower wisdom teeth—that is teeth wedged for want of room between the ascending ramus and the second molar—may, although free from caries or inflammation, be a cause of neuralgia. This seems explicable only on the supposition that the root of the wisdom tooth in some way presses upon or interferes with the inferior maxillary nerve. Section of the lower jaw shows how close to the nerve canal lie the lower wisdom tooth roots. In one case of severe neuralgia and "ear-ache," in which I extracted an impacted lower wisdom tooth (now in the Museum of the Odontological Society), it was evident that the trunk of the inferior maxillary nerve had traversed a foramen in one root and a deep groove in the other Complete anæsthesia of the parts supplied by the nerve immediately followed the operation, but sensation returned gradually in the course of months. Several cases of a like kind have been recorded

but in none has the trunk of the nerve seemed in such close relation to the tooth.

Inflammation of the dental periosteum is not a common cause of neuralgia, and as the teeth are always tender, slightly raised in their sockets, and loosened by the swelling within the alveoli, it is not likely that this condition, except in an extremely chronic phase, can be overlooked. Cases where exostosis affects roots are more often associated with neuralgia. In these cases the teeth have usually been carious; the pulps have been destroyed; the teeth, perhaps, filled. Long-continued congestion and slight, very chronic inflammation about the roots, leads to exostosis—the roots becoming studded with nodules or enlarged at their apices by deposit of cement. In most instances teeth so affected will show extra-sensibility under trial, but I have seen a great number of cases in which this was not apparent, in which the teeth did not ache, and in which the teeth being ultimately extracted, were found the seat of large exostoses—and proved to be the cause of neuralgia. Broken-down roots, the seat of exostosis or necrosis, are often buried in their sockets; their position being as a rule marked by a minute fistulous tract in the gum which has overgrown them.

As age advances the teeth become worn down by mastication. The enamel is first worn off, next the dentine suffers, and in time the pulp would be laid bare were it not that it undergoes calcification *pari passu* with the slow wasting of the tissues. In most cases the exposed dentine becomes hardened, polished, and insensitive; but it often remains more or less sensitive throughout or develops extra-sensibility at some period; and the teeth may pass into a condition of general hyperæsthesia, in which sudden slight pressure, as in biting on the masticating surface, will inflict a severe pang, or exposure to hot or cold fluids bring on an attack of pain. Teeth so affected are common excitants of neuralgia. On examination after extraction the pulps are usually found extensively calcified, the new tissue being scattered in isolated nodules throughout, and the remaining pulp showing traces of extremely slight inflammation. Badly-fitting artificial teeth are capable of causing neuralgia. This they may do in several ways: by pressure upon the gums; by causing erosion of tooth surfaces; and by giving rise to strain and tension upon remaining teeth.

Head[2] has described most minutely the various distant areas to which pain may be referred in dental disease. This description is too long for quotation here, and practically it is enough to bear in mind that although teeth nearest the seat of pain should be first

suspected, disease of any one tooth seems capable of exciting pain at remote parts of the head, face, and neck.

The age of patients is often a guide to diagnosis. Facial neuralgia in the young is in the vast majority of cases due to dental disease, or to other similar local irritation. Neuralgia of other origin and inveterate "tic" are extremely rare before middle age.

In neuralgic pain about the ear, in "ear-ache," and neuralgia around the orbit, the cause will often be discovered in dental disease; lower molars and wisdom teeth in the former, upper incisors and canines in the latter, being commonly the teeth at fault.

Neuralgic pain due to dental disease is usually, although by no means invariably, superficial, of a plunging, lancinating or burning character, following the course of nerve branches through the skin. When deeper-seated pain is complained of, other causes must be the more particularly considered; but patients are often not able to localise pain sufficiently for guidance in the matter of superficiality or depth below the surface.

To narrate cases of neuralgia of dental origin would be tedious. They are to be found in numbers among the out-patients in every hospital, and cases present themselves almost daily in dental practice in which patients have suffered for more or less prolonged periods from neuralgia, and have been medically treated for that affection, whilst the sole cause lies in dental disease; the proof being found in the fact that on the removal of that cause the attacks of pain at once cease, and do not again recur.

REFERENCES.—[1] "Clinical Soc.," 1889; [2] "Brain," No. 67.

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